EXPERIMENTAL REPORT
RAPPORT D'EXPERIENCE

Programme Committee Proposal Number
N° Projet Comité de Programme
D2-2-62

PROJECT TITLE : *TITRE DU PROJET :*

DIFFUSE SCATTERING AROUND BRAGG PEAKS OF LYOTROPIC LIQUID CRYSTALS

LIGNE : D2AM ~~IF~~

INSTRUMENT :	PETITS ANGLES	☐	EXAFS	☐
	7 CERCLES	☒	GM	☐
	BIO-CRISTALLOGRAPHIE	☐	SUV	☐

NUMBER OF RUNS USED 9
NOMBRE DE SESSIONS EFFECTUEES :

STARTING DATE 26/9/97
DATE DE DEMARRAGE :

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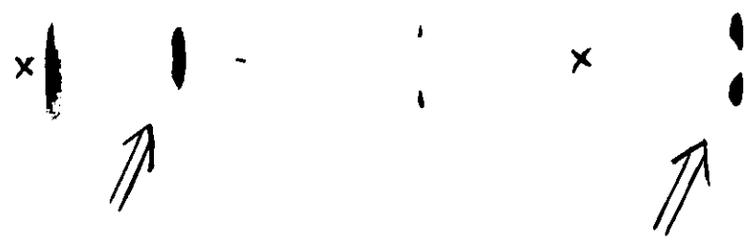
Abstract: The use of the 7-circle diffractometer of the D2AM beamline has allowed us to investigate in detail highly aligned samples of a lyotropic hexagonal liquid-crystalline phase. We were able to properly characterize the orientation quality (mosaic) of our samples, record and describe the thermal diffuse scattering, and study an interesting thermomechanical instability. All these results were reported in an article already accepted for publication in Europ. Phys. Journ. B.

In our experiment proposal, we described the detailed investigation of single domains of lyotropic hexagonal and cubic mesophases. Considering the number of runs (9) we had, we decided to study the hexagonal mesophase only. We used the 7-circle diffractometer to produce various kinds of scans (ϕ-scans, χ-scans, 2θ-scans) and fully characterize the mosaic of our flow-aligned samples. Moreover, the use of image plates allowed us to monitor the evolution with temperature of a thermomechanical instability already detected by optical techniques. In this respect, the access to the D2AM beamline proved decisive compared to previous unconclusive attempts carried on a rotating anode in-house. Below are shown a hexagonal reflection at room temperature (left) and its splitting on heating (right) which is the X-ray signature of the thermomechanical instability.



T = 23°C

T = 70°C